

Risk Assessment: Importation of Adult Queens, Package Bees and Germplasm of Honey Bees, *Apis mellifera* L., From Australia

Qualitative, Pathway-Initiated Pest Risk Assessment

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I. Introduction

The Act of August 31, 1922, entitled “An Act to regulate foreign commerce in the importation into the United States of the adult honey bee (*Apis mellifica*)” (referred to hereinafter as the Honeybee Act of 1922), prohibits the entry of honey bees from countries where diseases and parasites harmful to honey bees are known to exist. Additional amendments and regulations, promulgated by the Department of Agriculture, extended the Act to prohibit the importation of all life stages of the genus *Apis*, which expanded the prohibition to prevent the entry of diseases and pests harmful to honey bees and undesirable germplasm. Regulations promulgated under the Honeybee Act are published in Title 7 CFR Part 322.

The diseases, pests and germplasm specifically identified in the Honeybee Act and amendments, including regulations under the Federal Plant Pest Act, as superceded by the Plant Protection Act (7 U.S.C. 7701-7772), entitled Exotic Bee Diseases and Parasites (Title 7 CFR Part 319.76), are as follows:

Exotic Bee Parasites:

Acarapis woodi
Varroa jacobsoni (= *Varroa destructor*)
Tropilaelaps clareae
Euvarroa sinhai
Coelioxys spp.
Chrysis spp.

Exotic Bee Diseases:

Aspergillus spp.
Bacillus spp.
Entomophthora spp.
Beauvaria spp.
Cordyceps spp.
Saccharomyces spp.

Because the protozoan *Nosema apis* is widespread in the United States, it is not considered an exotic disease.

Only the United States Department of Agriculture can import adult honey bees from countries other than Canada under the rules and regulations prescribed by the Secretary of Treasury and the Secretary of Agriculture. Recent trade agreements (the General Agreement on Tariffs and Trade, and the North American Free Trade Agreement) obligated the United States to consider imports of honey bees from countries where science-based analyses indicate acceptable risk levels and/or adequate risk

management tactics. This risk assessment was prepared by the Animal and Plant Health Inspection Service (APHIS) and the Agricultural Research Service (ARS) of the United States Department of Agriculture (USDA) to examine the risks associated with the importation into the United States of adult queens, package bees (adult queens, adult drones and adult workers) and germplasm (semen and ova) of honey bees, *Apis mellifera* L., from Australia. The methods we used to initiate, conduct, and report this pest risk assessment are consistent with guidelines provided by the United Nations, Food and Agriculture Organization (FAO) and by the Office International des Epizooties (OIE). The format of this assessment is largely based on that of the USDA APHIS PPQ guidelines (1997). This document satisfies the requirements of OIE Guidelines for risk assessment (OIE 2000).

II. Risk Assessment

A. Initiating Event: Proposed Action

Australia first requested access of their honey bees to the United States in 1987. That request initiated an informal risk assessment. The current risk assessment follows a formal request made in January 1997 by the Australian government for access to our market. This assessment closely follows in content and time a recently published (December 9, 1999) risk assessment for the importation of live honey bees into the United States from New Zealand (Docket No. 99-091-1). The Australian apiculture pest risk is very similar to that in New Zealand, differing by the addition of European Foulbrood disease and lack of varroa mite to those diseases and pests found in New Zealand.

Canada has allowed the importation of honey bee queens and package bees from Australia since 1973. The movement of honey bees from Canada into the United States has not been regulated or restricted since Canada first allowed entry of Australian honey bees. Although much concern was initially raised about the inadvertent import of *Melittiphis alvearius* and half-moon syndrome from New Zealand and Australia into North America, no reports have indicated adverse events in either Canada or the United States.

On May 3, 2000 we published in the Federal Register (65 FR 25701, Docket No. 00-032-1) a notice of availability for the draft of this risk assessment. During the 60-day public comment period, we received six comments on the draft risk assessment. We have responded to all comments received, whether relevant to the risk assessment or not, in an appendix to this revised risk assessment.

III. Assessment of Australian Honey Bee Regulations and Surveillance Programs

The Quarantine Act of 1908 and quarantine conditions issued in 1996 provide the legislative basis for Australian honey bee quarantine policy. Quarantine measures are implemented by the Australian Quarantine and Inspection Service (AQIS). To prevent the introduction of bee diseases and pests,

commodities that present a significant quarantine risk, such as used beekeeping equipment and live bees may only be imported if they meet stringent health requirements and are accompanied with the proper declaration and health certificate from the country of origin. Entry of honey bees into Australia cannot occur until an import permit has been issued by the Manager, Animal Programs Section, AQIS. Importation of live bees is restricted to queen bees and their escorts. The importation of package bees is not permitted. For countries where either varroa mite (*Varroa spp.*), tracheal mite (*Acarapis woodi*) or Tropilaelaps mite (*Tropilaelaps spp.*) occur, the health certificate from the country of origin must confirm that bees to be exported to Australia have been treated with an efficacious acaricide for a period of 56 days immediately prior to export. Pre-export inspection is required to confirm that the hives from which bees for export have been sourced are free of visible evidence of the following honey bee diseases and/or pests:

- American foul brood (*Bacillus larvae*)
- European foul brood (*Melissococcus pluton*)
- External acariasis (*Acarapis extermus*, *A. dorsalis*, *A. vagans*)
- Tracheal mite (*Acarapis woodi*)
- Half-moon syndrome
- Varroa mite (*Varroa spp.*)
- Tropilaelaps mite (*Tropilaelaps spp.*)
- Bee Lice (*Braula spp.*)

Imported bees are collected by a Quarantine Officer at the Sydney Mail Exchange or Sydney International Airport and delivered to the Eastern Creek Animal Quarantine Station.

For importation of queen bees with escorts, the queen is introduced into a nucleus hive at the quarantine facility, and the original escorts are killed and examined for:

- Tracheal mite (*Acarapis woodi*)
- Varroa mite (*Varroa spp.*)
- Tropilaelaps mite (*Tropilaelaps spp.*)

Nucleus hives are maintained in flight cages while in quarantine. Larvae produced by an imported queen during quarantine may subsequently be released from quarantine subject to the satisfactory completion of examinations (microscopic where necessary) of appropriate numbers of worker bees and brood to verify that exotic parasites and bee strains are not present. Upon satisfactory completion of quarantine requirements, brood frames can then be removed from the nucleus colony and placed into a grafting room where larvae are grafted into plastic queen cells before being released to the importer. The imported queen is destroyed at the completion of the quarantine process due to the possibility of latent infection with exotic parasites, particularly tracheal mite (*Acarapis woodi*).

Domestic movements of honey bees are regulated through state legislation. State authorities are empowered to place movement restrictions on hives infected with notifiable diseases and to destroy affected hives where necessary for disease control. Each state determines the restricted diseases and controls movements from other states. Interstate movements are permitted subject to satisfactory inspection by state government apiary inspectors. Under existing legislation, beekeepers are required to notify relevant state government authorities of notifiable diseases, such as American foulbrood, European foulbrood and chalkbrood. Western Australia remains free of European foulbrood. Notifiable diseases also include exotic diseases and pests such as tracheal mite (*A. woodi*) and varroa mite (*V. destructor*).

For export of honey bees to foreign countries, state government apiary inspectors are authorized under the Export Control Act of 1982 to perform pre-export inspections. Inspection report details and laboratory results (where necessary) are sent to the regional AQIS Veterinary Officers. The certifying Veterinary Officer verifies the report and, provided the pre-export results and inspections meet the requirements of the country of destination, issues an export permit and health certificate. Provision exists for prosecution where necessary.

IV. Assessment of Australia Honey Bee Species and Strains

The honey bee, *Apis mellifera*, is not indigenous to Australia and was first imported into New South Wales in 1822 and Western Australia in 1866 (Gibbs and Muirhead, 1998). Australia allows, with proper permits, the commercial importation of *Apis mellifera* from: Austria, Canada, Canary Islands, Czech Republic, Slovakia, France, Germany, Italy, New Zealand, Norfolk Island, Poland, the United Kingdom, U.S., the Newly Independent States of the former Soviet Union, Croatia, Slovenia, Former Yugoslav Republic of Macedonia, Bosnia and Herzegovina, and the Federal Republic of Yugoslavia.

The Africanized honey bee, *Apis mellifera scutellata*, and its hybrids are not known to occur in Australia. The Asian honey bee, *Apis cerana*, has spread from Irian Jaya into Papua New Guinea and onto Australian islands in the Torres Strait (January 1992). An aggressive quarantine program contained the Asian honey bee, and it has not been introduced into mainland Australia. The Asian honey bees in the Torres Strait are more than 1200 km from the nearest commercial exporter of queen and package bees (Lacey, 1999).

Based on the history of honey bee importations into Australia, together with the absence of any reports of species other than *Apis mellifera* or of other adverse subspecies or strains, Australian honey bees are considered the same subspecies of honey bees found in the United States.

V. Pest List: Pests Associated with Honey Bees in Australia

If a pest or disease of quarantine importance to the United States, as listed in the Introduction on page 2, does not appear in the following table, there is no evidence indicating that pest or disease is present in Australia and therefore is not likely to be present in exports from that country.

Diseases or Pests in Australia	In U.S.	Comments	References
Fungi			
<i>Ascosphaera apis</i> (Chalkbrood Disease)	Yes		AQIS communicate
Bacteria			
<i>Paenibacillus larvae larvae</i> (American Foulbrood)	Yes	OIE List B Pathogen	AQIS communicate
<i>Melissococcus pluton</i> (European Foulbrood)	Yes	OIE List B Pathogen	AQIS communicate
Protozoa			
<i>Nosema apis</i> (Nosema Disease)	Yes	OIE List B Pathogen	AQIS communicate
Viruses			
Sacbrood Virus	Yes		AQIS communicate
Chronic Bee Paralysis Virus	Yes	Not reported in HI ¹	Liu 1991, Furgala and -Mussen 1978, Liu et al. 1987, Bailey and Ball 1991, Bruce et al. 1995----
Kashmir Bee Virus	Yes	Not reported in HI ¹	Anderson 1991, Furgala and Mussen 1978, Liu et al. 1987, Bailey and

			Ball 1991, Bruce et al. 1995
Black Queen Cell Virus	Yes	Not reported in HI ¹	Furgala and Mussen 1978, Liu et al. 1987, Bailey and Ball 1991, Bruce et al. 1995
Cloudy Wing Virus	Yes	Not reported in HI ¹	CSIRO communicate
Parasitic Mites			
<i>Acarapis dorsalis</i> Morgenthaler	Yes	Not reported in HI ¹	Morse 1978, CAPA 1991, Delfinado-Baker 1994,
<i>Acarapis externus</i> Morgenthaler	Yes		Morse 1978, CAPA 1991, Delfinado-Baker 1994,
<i>Mellittiphys alvearius</i>	Yes	Not reported in HI ¹	AQIS communicate
Noninfectious Conditions			
Melanosia	Yes		
Beekeeping Pests			
<i>Galleria mellonella</i> (L.) Greater Wax Moth	Yes		AQIS communicate
<i>Achroia grisella</i> (F.) Lesser Wax Moth	Yes		AQIS communicate
<i>Braula coeca</i> Bee-louse	Yes	Tasmania only Not reported in HI ¹	AQIS communicate

¹“Not Reported” acknowledges information received from local beekeepers and apiary inspectors on the apparent absence of a virus in a State. The Hawaii Department of Agriculture finished (1/2002) a survey of the State for varroa mite and tracheal mite. No mites were found in the 837 hives sampled from 138 apiaries totaling 8400 hives. All islands were sampled (unpublished data, Hawaii Department of Agriculture communicate, 1/2002).

VI. List of Quarantine Pests

- A. Quarantine significant diseases or pests in Australia** (diseases, pests, or adverse species or strains of honey bees that occur in Australia but not in the United States).

NONE

- B. OIE List A Diseases in Australia** (transmissible diseases which have the potential for very serious and rapid spread, irrespective of national borders, which are of serious socio-economic consequence and which are of major importance in the international trade of animals and animal products)

NONE LISTED BY OIE.

The risk assessment for the continental United States stops here.

VII. Conclusion: Pest Risk Potential

The USDA does not have Federal quarantine programs for AFB or EFB because of the widespread distribution of these bacteria in the continental United States. Consequently, the inspection and certification program currently used by Australia for honey bee exports to other countries where AFB is endemic and under statutory control are adequate for shipments to the United States. The statutory measures for AFB prevention and control in Australia are at least equivalent to those imposed by individual state apiary inspection programs in the United States. Although this pest already occurs in the United States, its listing as a pest of international importance relative to the movement of honey bees requires caution.

The island state of Hawaii presents a unique situation that merits separate analysis. Many of the honey bee viruses acknowledged as occurring in Australia have not been reported from Hawaii. None of the viruses reported in section V of this risk assessment are actionable under OIE guidelines as these are not OIE List A or B pests and are not known to have an economic consequence for beekeepers. Hawaii, however, has at least 62 species of endemic yellow-faced bees (Frank Howarth, pers. Comm.)(Colletidae: *Hylaeus spp.*). Approximately 35 of these are federally listed as species of special concern (<http://www.defenders.org/habitat/highways/new/states/images/hianimals.pdf>). Many species of *Hylaeus* are thought to be extinct as they have not been reported in nearly 100 years.

(<http://hbs.bishopmuseum.org/endangered/ext-insects.html>). Also, several endangered Hawaiian plants (silverswords: *Argyroxiphium* spp.) are pollinated primarily by yellow-faced bees. Honey bees visit the flowers of the silversword but are not effective at pollination (http://www.uhh.hawaii.edu/~scb/abstracts/Forsyth_S.htm).

There are no reports that *Hylaeus* spp. are susceptible to the maladies of *Apis mellifera*. We were unable to find any literature on the susceptibility of *Hylaeus* to honey bee viruses, even though, yellow-faced bees are present on all continents except Antarctica (Michener 2000). However, it is notable that some species of *Hylaeus* nest in vacated bee and wasp nests (not *Apis mellifera*) (Michener, 2000). If *Hylaeus* were susceptible to any diseases that might occur with these hymenopteran species than *Hylaeus* has already been exposed to some of these maladies.

We found no evidence of other *Apis* species, *Apis* subspecies, or strains, that would be of concern relative to the importation of adult honey bee queens, package bees, or germplasm from Australia. Likewise, we found no evidence of viruses or other disease organisms that posed significant risk to the import of adult honey bee queens, package bees, or germplasm. Nevertheless, the zoosanitary measures established by AQIS for inspection of honey bees for export is comprehensive and these mitigation measures along with those in the proposed rule will safeguard honey bees.

The fact that pre-export inspections of honey bees in Australia will be based on visual examination of source colonies will not provide any safeguards to prevent shipping bees with those viruses that seem to have no economic impact on *Apis mellifera* (section V). However, those diseases that are not OIE list A or B may still pose a problem for the yellow-faced bees of special concern.

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APPENDIX I:

OIE List B Diseases in Australia (transmissible diseases which are considered to be of socio-economic importance within countries and which are significant in the international trade of animals and animal products):

1. *Paenibacillus larvae larvae* (American Foulbrood)

This honey bee disease occurs in Australia and the United States, including Hawaii. *Paenibacillus larvae larvae* is a slender rod-shaped bacterium with slightly rounded ends and a tendency to grow in

chains (Shimanuki and Knox, 1991). The spore is oval and approximately twice as long as wide. In larvae infected for less than 10 days, vegetative cells are present with some newly formed spores.

American foulbrood (AFB) disease can destroy a colony of bees if left untreated. The disease can occur anytime during the active brood rearing season. Larvae become immune about 72 hours after egg hatch. The most common means by which this disease is transmitted is by beekeepers who interchange brood combs between healthy and infected colonies. In addition, AFB can be transmitted colony-to-colony by adult bees and also by feeding healthy colonies honey from colonies with AFB. This disease is considered an economic pest and methods to mitigate this vary from country to country and state to state. In most jurisdictions, bee inspection programs, as we know them today, had their beginnings to mitigate AFB.

Possible sources of disease transmission: queens, package bees (artificial swarms), established colonies with combs, used beekeeping equipment, honey, and pollen.

The disease is detected by inspection of colonies during the brood rearing season. In the U.S., health certificates are traditionally issued by the state inspection services certifying a disease-free source apiary, date of last inspection and inspector's name. No practical method is available for certifying the absence of *Paenibacillus larvae* in package bees and queens.

2. *Melissococcus pluton* (European Foulbrood Disease)

European Foulbrood disease (EFB) occurs in Australia and the United States, including Hawaii. *Melissococcus pluton* is the bacterial causative agent for European Foulbrood disease. The disease is not considered a serious disease by most beekeepers. Only larvae less than 2 days old are affected by the disease, which usually strikes in mid to late spring. Infected larvae usually express a varied microflora. The infectious cycle begins when the larva ingests contaminated food. The bacteria establish in and fill up the midgut, increasing the food requirements of the larva. Nurse bees will stop feeding the infected larva when the unusual increased food needs are detected. The infected larva may be ejected. Those that die in the colony do so in the coiled stage.

European Foulbrood can be detected with a variety of techniques. Long dead larvae appear as a scale in the cell that is more rubbery than the scale produced by American Foulbrood. The brood comb can take on an unusual appearance with scattered uncapped cells among normal capped cells. The cell caps may also appear concave whereas the healthy cell cap is convex. The brood comb can have a unique sour smell. Lastly, an ELISA test can be used to identify even low levels of EFB.

Treatment to control EFB is usually not needed. A healthy colony can overcome EFB during a good nectar flow. Stressed colonies, including those that are moved frequently for pollination services, are the most effected. Antibiotics, particularly oxytetracycline, are available to treat the disease.

3. *Nosema apis* (Nosema Disease, Nosemosis).

Nosema disease occurs in Australia and the United States, including Hawaii. *Nosema apis* is the protozoan that causes nosema disease. *Nosema apis* spores are large, oval bodies that develop exclusively within the epithelial cells of the ventriculus of the adult honey bee. Nosema disease usually manifests itself in bees that are confined; therefore, the heaviest infections are found in winter bees, package bees, bees used for pollination in greenhouses, etc. Since nosema disease occurs worldwide, it was excluded from the Honeybee Act and its movement within the United States is not under statutory control.

The disease reduces the longevity of adult bees and hence can affect the productivity and survival of honey bee colonies. No single symptom typifies nosema disease. Differences between healthy bees and heavily infected bees can be seen by removing the digestive tract and examining the ventriculus. The ventriculus of a healthy bee is straw brown, and the individual circular constrictions are clearly seen. In a heavily infected bee, the ventriculus is white, soft, and swollen, obscuring the constrictions (White 1918). However, positive diagnosis can only be made by sacrificing adult bees from packages or queen cages for microscopic examination. Fecal material of queens can also be examined for the presence of *Nosema apis* spores.

Possible sources of disease transmission: queens, package bees (artificial swarms), established colonies with combs, and used beekeeping equipment.

A. Other Diseases, Pests or Physiological Maladies of Concern

1. Kashmir bee virus .

Kashmir bee virus (KBV) occurs in Australia and the United States, but is not reported in Hawaii. KBV was first isolated from adult *Apis cerana*, the Eastern honey bee, by Bailey and Woods (1977). Since then, KBV has been isolated from *A. mellifera* in Australia, Canada, and the U.S. The KBV found in each of the countries are serologically related but not considered identical. According to Bailey and Ball (1991), “the Australian strains of KBV were associated with severe mortality of adult bees in the field and have also appeared to cause death of larvae.” AQIS has noted that subsequent research failed to demonstrate a causal association between KBV and mortality in honey bee larvae (Anderson 1991).

Possible sources of disease transmission: queens, package bees (artificial swarms), and established colonies with combs.

Since *Varroa destructor* is not reported in Australia, it is apparent that KBV is primarily transmitted “bee to bee” and does not require mite transmission. However, diagnosis of the virus requires activation

of the virus by injecting a suspect suspension in an apparently healthy pupae and observing for symptoms and serologically confirming the presence of the virus.

Kashmir bee virus has not been reported to occur in Hawaii.

2. Chronic Bee Paralysis Virus

Chronic bee paralysis disease is also referred to as the “hairless black syndrome.” The virus that causes chronic bee paralysis is widespread and occurs in Australia and the United States, but is not reported in Hawaii. However the disease rarely causes economic damage. Because the susceptibility to the disease is genetically inherited, generally out-crossing bee stocks remedies the situation.

Possible sources of disease transmission are package bees (artificial swarms), established colonies with combs, and queens.

Chronic bee paralysis virus is not easily detected. Although individual colonies may show adult bees with the symptoms of chronic bee paralysis disease, positive confirmation requires serology. This disease is not included in health certificates used for interstate movement of honey bees in the United States.

B. Undesirable Species, Subspecies or Strains of Honey bees

NONE

APPENDIX II: Comments on Docket No. 00-032-1

On May 3, 2000, we published in the Federal Register (65 FR 25701, Docket No. 00-032-1) a notice of availability for a pest risk assessment titled, "Risk Assessment: Importation of Adult Queens, Package Bees, and Germ Plasm of Honey bees (*Apis mellifera* L.) From Australia." We solicited public comment on the pest risk assessment for 60 days, ending July 3, 2000. By that date, we received 6 comments. They were from representatives of the U.S. beekeeping industry and State departments of agriculture.

Five commenters expressed concerns about, or asked for changes to, portions of our pest risk assessment. These five commenters, as well as the remaining commenter, also raised issues, such as quality issues and trade issues, that are not directly relevant to our pest risk assessment. All of their comments are discussed below.

Comments on the Pest Risk Assessment

Comment: The pest risk assessment does not include sufficient information about the impact Australia's pest and disease may have on non-*Apis* species in the United States.

Response: In the revised draft of our pest risk assessment, we address the potential impact of queens and package bees imported from Australia on yellow-faced bees in Hawaii. For the continental United States, our pest risk assessment determined that all of the significant bee diseases and pests found in Australia are also present on the continental United States. Therefore, non-*Apis* species on the continental United States have already had exposure to these diseases and pests.

Further, since 1973, Canada has imported honey bees from Australia. Because there are currently no restrictions on the importation into the United States of honey bees from Canada, we expect that honey bees from Australia have been imported into the continental United States via Canada since that time. Hawaii, however, has a State law prohibiting the movement of honey bees into that State. Therefore, we believe that while bees on the continental United States have been exposed to all of Australia's bee pests and diseases, Hawaiian bees have not. As a result, our proposal incorporates requirements based on the standards of the Office International des Epizooties (OIE), which is the standard-setting body recognized by the World Trade Organization for animal health, for the importation into Hawaii of queens and package bees from Australia.

Comment: The pest risk assessment needs to consider that the introduction of Australian strains of Kashmir bee virus (KBV), a strain related but not identical to the strain of KBV found in the United States, may have a more severe impact on honey bees in the United States than on honey bees in Australia. This is especially true if KBV can be vectored by the varroa mite. In addition, the Australian strain of European foulbrood is resistant to the antibiotic Oxytetracycline and, therefore, presents appreciable risks to U.S. bees and U.S. beekeeping if imported into the United States.

Response: Appendix I of this revised pest risk assessment discusses Kashmir Bee Virus (KBV); however, we do not address different strains of KBV because that virus is not considered to be a significant disease of honey bees by OIE. As such, we cannot propose to impose special requirements on Australian queens and package bees imported into the United States based on KBV. We agree with OIE that KBV is not a significant disease of honey bees when it is the only disease or pest present. As the commenter notes, KBV is found in the United States. There is no evidence that the strain present in Australia is different from that found in the United States.

Oxytetracycline resistance is already present in U.S. honey bees. As such, we cannot base any regulatory decisions on the Oxytetracycline resistance of the Australian strain of European foulbrood.

In addition, as discussed earlier, we expect that honey bees from Australia have been imported into the United States via Canada for many years. We have not identified any negative consequences in U.S. honey bees as a result of these importations.

Comment: In the table under section V of the pest risk assessment, the following organisms are listed as occurring in both Australia and the continental United States: black queen cell virus, cloudy wing virus, *Acarapis dorsalis*, *Melittiphis alvearius*, and *Braula coeca*. The pest risk assessment should note that none of these have been recorded in Hawaii. Melanosis, a condition that affects honey bee queens, has also not been recorded in Hawaii.

Response: We note in this revised pest risk assessment that black queen cell virus, cloudy wing virus, *Acarapis dorsalis*, *Melittiphis alvearius*, *Braula coeca*, and melanosis are not reported in Hawaii. Hawaii's State-wide survey determined that State is free of tracheal mite and Varroa mite, but the survey did not check for the presence of viruses or diseases. We are relying on reports from local beekeepers and apiary inspectors to demonstrate the apparent absence of a virus or other bee pest in Hawaii.

Comment: The pest risk assessment should consider the relative proximity and movement pattern towards the Australian mainland of *Tropilaelaps* mite (*Tropilaelaps* spp.), which is now established in Papua, New Guinea, and its host *Apis cerana*, which is now found on Australian islands in the Torres Strait. Infestation of this mite in Australia may have already occurred.

Response: The Australian Quarantine and Inspection Service (AQIS) is monitoring the situation around the Torres Strait very carefully. It is in Australia's own best interest to keep *Apis cerana* and the *Tropilaelaps* mite out of Australia. OIE standards require that they report to the international community any changes to this situation. If we were to allow importation into the United States of honey bees from Australia, we would be prepared to modify any rules or regulations concerning that importation if Australia's bee disease or pest status changes.

Comment: In accordance with OIE standards, the pest risk assessment should provide an initial categorization of biological agents as potential hazards or not. Instead, the pest risk assessment presents a compilation of bee diseases and pests in Australia without reference to the process employed to generate the list.

Response: The pest list assembled in section V of the risk assessment is a compilation of all bee pests and diseases found in Australia. The reference for each is presented in the last column of the table. The severity or potential hazard evaluation of each disease and pest was presented in the "Comments" column. In addition, this column mentions any OIE categorization. The "Comments" column in combination with the "In U.S." column provides an assessment of the disease or pest. All of the significant bee diseases and pests found in Australia are also present in the United States.

Comment: The pest risk assessment should cite the sources used to determine that no diseases, pests, or adverse species or subspecies of honey bees occur in Australia that do not also occur in the United States. The absence of an AQIS report is not conclusive support for this statement. Australian ignorance of such diseases, pests, and adverse species and subspecies does not mean that they do not exist in Australia.

Response: Full references are located in section 9 (IX) of the risk assessment. Further, we disagree that the absence of an AQIS report is not support for Australia's freedom from quarantine significant pests, diseases, and adverse species or subspecies of honey bees. As stated above, OIE standards require that AQIS report to the international community any changes to Australia's bee disease or pest status.

Comment: What survey of Australian bees found no evidence of quarantine significant diseases and pests? Who conducted the survey? When was the survey conducted? What independent group of experts evaluated the results of the survey?

Response: The survey of Australian bee diseases and pests was provided by Dr. Dennis Anderson, Principal Research Scientist, CSIRO Entomology, Canberra, Australia, and was reviewed

by APHIS in conjunction with honey bee scientists working for the Agriculture Research Service, U.S. Department of Agriculture. The scientists included, but were not limited to, Dr. Hachiro Shimanuki and Dr. William T. Wilson. The report was provided by Dr. Anderson at APHIS' request in preparing the pest risk assessment. The report was current at the time of the preparation of the pest risk assessment.

Comment: A comprehensive evaluation of the mite *Melittiphis alvearius* and an assessment of that mite's potential for causing biological and economic harm in the United States should be conducted prior to allowing imports from Australia and New Zealand.

Response: *Melittiphis alvearius* is already present in the United States. Because this pest is present in the United States, we have no science-based reason to refuse to propose to allow importations of honey bees from Australia or New Zealand based on the presence of *Melittiphis alvearius* in those countries. Therefore, we have no reason to complete a more extensive evaluation of *Melittiphis alvearius* than is presented in this revised pest risk assessment.

Comments on Other Issues

Comment: Unlike U.S. queens, Australian queens have not been subjected to natural selection for resistance to varroa or tracheal mites. Thus, Australian queens and package bees are almost certainly more susceptible to those parasites than are U.S. queens and bees. Consequently, it is highly probable that importation of Australian queens will reduce the average level of mite resistance in the U.S. bee population. Risk analysis demands assessment of the magnitude of harm that may ensue should this happen.

Response: This is a quality issue, not a pest risk issue. In terms of natural selection, if Australian queens and package bees are more susceptible to varroa mite or tracheal mite than U.S. honey bees, then Australian queens and package bees imported into the United States would be selected against and would not survive or proliferate in an apiary, or in the natural environment, in the United States. Further, if we were to allow the importation of adult queens and package bees from Australia, and if U.S. beekeepers experienced performance problems with those bees, then U.S. beekeepers would not continue to order queens or package bees from Australia.

Comment: Lower mite resistance could lead to the collapse of U.S. bee colonies to infestations of varroa and tracheal mites. It could also lead to increased use of chemical applications to U.S. hives to control these mites, which would in turn accelerate the mites' resistance to the chemicals. Therefore, USDA should not allow imports of Australian honey bee stock.

Response: This is a quality issue, not a pest risk issue. As discussed above, if Australian queens and package bees are more susceptible to varroa mite or tracheal mite than U.S. honey bees, then Australian queens and package bees imported into the United States would be selected against and would not survive or proliferate in an apiary, or in the natural environment, in the United States. Such performance problems would likely result in reduced U.S. demand for Australian queens and package bees. Even if disease susceptibility is not an issue, if we were to allow the importation into the United States of honey bees from Australia, we estimate that few shipments of honey bees would be imported into the United States from Australia. U.S. interest in Australian honey bees centers on queens, which

are available earlier in the year than queens produced in the United States. For these reasons, we do not believe that, if we were to allow the importation of honey bees from Australia, those importations would lead to the increased use of chemical applications to U.S. hives or increased mites' resistance to chemicals used to treat hives.

Comment: Reports from Canadian beekeepers indicate that Australian honey bees are inferior to U.S. bees. Therefore, USDA should not allow imports of Australian honey bees.

Response: This is a quality issue, not a pest risk issue. Even if Australian honey bees are indeed "inferior" to U.S. honey bees, this does not offer a scientific basis for precluding their importation from the United States. Further, if we were to allow the importation into the United States of honey bees from Australia, and if Australian honey bees are inferior to U.S. honey bees, then Australian honey bees would not be very popular with U.S. beekeepers.

Comment: It is scientifically impossible to prove that Australia does not harbor unique bacteria, viruses, amoebae, paramecia, or other potentially dangerous honey bee pathogens or parasites. Therefore, we should not even consider allowing honey bee imports from Australia.

Response: This is a general risk issue. Our pest risk assessment determined that all of the significant bee diseases and pests found in Australia are also present on the continental United States. Further, as discussed earlier, Canada has imported Australian honey bees since 1973. Because there are currently no restrictions on the importation into the United States of honey bees from Canada, we expect that honey bees from Australia have been imported into the United States via Canada for many years. We have not identified any negative consequences in U.S. honey bees as a result of these importations